INVASIVE SPECIES

THREATS TO HAWAI'I VOLCANOES NATIONAL PARK

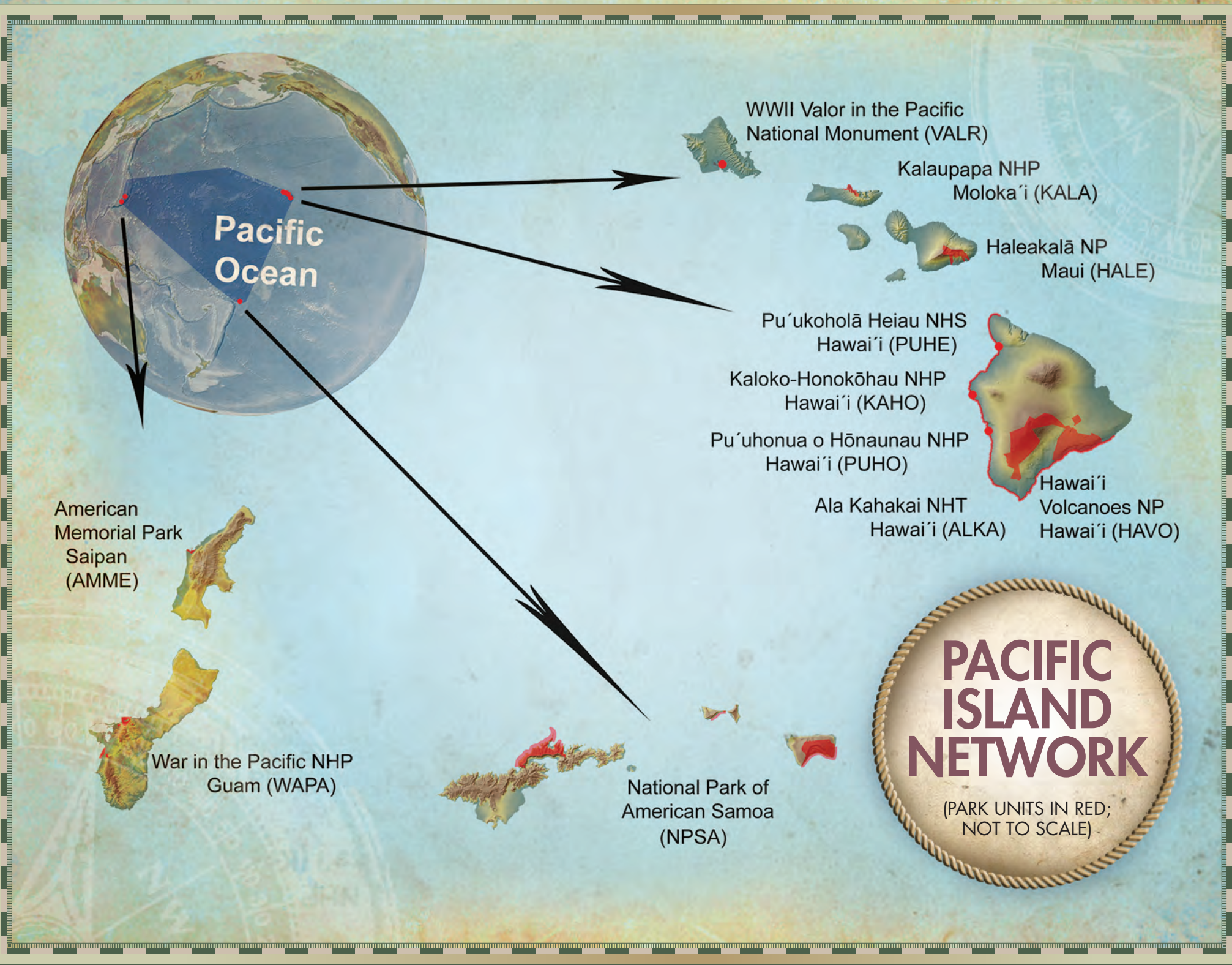
National Park Service
U.S. Department of the Interior

PACIFIC ISLAND NETWORK
NPS Inventory & Monitoring

UNIVERSITY OF HAWAI'I
UA MAU KE EA O KA 'ĀINA I KA PONO

BIISC

2013 CALENDAR


Pacific Ocean
WWII Valor in the Pacific National Monument (VALR)
Kalaupapa NHP Moloka´i (KALA)
Haleakalā NP Maui (HALE)
Pu´ukoholā Heiau NHS Hawai´i (PUHE)
Kaloko-Honokōhau NHP Hawai´i (KAHO)
Pu´uhonua o Hōnaunau NHP Hawai´i (PUHO)
Ala Kahakai NHT Hawai´i (ALKA)
Hawai´i Volcanoes NP Hawai´i (HAVO)
American Memorial Park Saipan (AMME)
War in the Pacific NHP Guam (WAPA)
National Park of American Samoa (NPSA)
PACIFIC ISLAND NETWORK
(PARK UNITS IN RED; NOT TO SCALE)

Invasive Plant Species:
a Threat to Our Islands

ISLAND ECOSYSTEMS are vulnerable to invasion because of the unique species and habitats that evolved in isolation from the rest of the world. Most nonnative plants introduced by people pose no significant threat to native ecosystems, but some nonnative species can establish, spread and permanently alter our coastlines and forests. Plants that become established and spread into native habitats are called invasive.

Invasive plants may reduce native plant diversity and abundance, alter vegetation structure, and can lead to significant economic and cultural costs. In Hawaii alone, invasive species are estimated to have cost $500 million through lost agriculture and property damage. Once established, invasive plants are difficult to control, making prevention and early detection our best hope for protecting our parks.

This calendar features 12 invasive plants. These species are likely to severely impact the native plant communities if they become established. **You can help stop the spread of invasive species by:**

- **being vigilant with new and unusual plants that you do not recognize, start by learning these 12 invaders**
- **cleaning boots, gear and vehicles to stop the spread of invasive seeds, especially in native plant communities**
- **planting and restoring native species and habitats**
- **properly disposing of compost, agricultural, and garden waste that may contain nonnative seeds**
- **never planting or transporting invasive species**

Please use the information in this calendar to help spread the word on the problems invasive species present to the park. An engaged, informed and alert park staff and public remains one of the best ways to detect and prevent the spread of invasive species, and protect our island home.

The Pacific Island Network Inventory and Monitoring Program assists national parks in locating nonnative plants as part of its mission to monitor selected park resources.

TO REPORT AN INVASIVE SPECIES:

Within Hawai'i Volcanoes National Park:

David Benitez, Ecologist
David_Benitez@nps.gov
tel. 808-985-6085

Outside of the park on the Big Island:

Big Island Invasive Species Committee
tel. 808-961-3299
Online Pest Reporting:
www.reportapest.org

Pacific Island Network
Inventory & Monitoring Program

PO Box 52
Hawaii National Park, HI 96718
(808) 985-6185 phone
(808) 985-6111 fax
http://science.nature.nps.gov/im/units/pacn/

FOR MORE INFORMATION ON INVASIVE SPECIES:

Hawaii Ecosystems at Risk Project
www.hear.org

Hawaii-Pacific Weed Risk Assessment
www.hpwra.org

Hawaii Invasive Species Council
www.hawaiiinvasivespecies.org

Hawaii Early Detection Network
www.reportapest.org

Front Cover Photo:
Mauricio Mercadante
Kāhili flower (*Grevillea banksii*)

Back Cover Photo:
B. Navez
Ironwood (*Casuarina equisetifolia*)

Koster's curse

Clidemia hirta

Be on the lookout for this
INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

◀ Flowers and fruits.

PHOTO: Forest & Kim Starr (UH)

▲ Hairy leaves with a distinctive "leaf within a leaf" vein pattern.

KOSTER'S CURSE is a sprawling shrub that grows up to 9' tall. Its stems grow vine-like and are covered in coarse red bristles that get lighter with age. The leaves are covered with rough hairs and have a distinctive "leaf within a leaf" vein pattern. The deep leaf veins give a "quilted" appearance. Its small 5-petaled white flowers grow in clusters and its fruits are black and fleshy (.3" long). Mature plants produce up to 500 fruits yearly, with each fruit containing 100 small seeds.

PHOTO: Forest & Kim Starr (UH)

Koster's curse

Clidemia hirta

SPECIES TYPE & ORIGIN: Koster's curse is a shrub native to the tropical Americas.

IMPACTS: Koster's curse can form impenetrable thickets that crowd out all other plants and impede movement for humans and animals. It can spread rapidly into areas disturbed by pigs, landslides, fire, storms, and humans.

LOCAL DISTRIBUTION & HABITAT: Koster's curse has been introduced and is considered a major weed throughout Oceania, Southeast Asia, Australia, and India. In Hawaii, it is established in the wild on Kaua'i, O'ahu, Moloka'i, Maui, and the Big Island. It thrives in moist environments, but is otherwise tolerant of a wide range of conditions and grows in areas from sea level up to 4,000' elevation.

DISPERSAL MECHANISM: Koster's curse seeds are moved by birds, pigs, and other animals who consume the fruit, and on people who move through infested areas. Its bristle-covered fruits can attach to clothing, feathers, and fur. The miniscule seeds contaminate mud which can be moved long distances on vehicles. Plants also spread rapidly through vegetative growth.

CULTIVATION: Koster's curse is not cultivated, but was unintentionally moved throughout the Pacific in the 1880s in contaminated nursery stock and coffee plants. Koster's curse is a Hawaii state noxious weed and is illegal to plant or transport across the state.

HOW TO HELP: Report potential sightings within Hawai'i Volcanoes National Park:

DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

January 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1 *New Year's Day*	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21 *Martin Luther King, Jr. Day*	22	23	24	25	26
27	28	29	30	31		

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gorse

Ulex europaeus

Be on the lookout for this INVASIVE SPECIES

► 1" long spines and small leaves.

PHOTO: Norman E. Rees | USDA Agricultural Research Service Retired, Bugwood.org

PHOTO: Forest & Kim Starr (UH)

▲ Gorse flowers smell slightly like coconut.

GORSE is a thorny shrub that grows up to 6' tall. It is covered with 1" spines that dwarf its small leaves. Its yellow flowers grow in clusters and smell slightly of coconut. Its small hairy seed pods (.8" long) split open at maturity flinging seeds a considerable distance away from the parent plant.

PHOTO: Forest & Kim Starr (UH)

gorse

Ulex europaeus

SPECIES TYPE & ORIGIN: Gorse is a shrub native to Western Europe.

IMPACTS: Gorse can form dense stands that make pastures unproductive and impede the movement of humans and livestock. Its oily foliage and seeds make it an extreme fire hazard. As a nitrogen-fixing species, gorse can alter the structure and composition of native ecosystems, potentially facilitating further invasion by other invasive species. It can produce 14 million seeds per acre per year. Seeds can persist for 50+ years.

LOCAL DISTRIBUTION & HABITAT: Gorse is considered a weed in 30 countries and is one of Australia's top 20 weeds. In Hawaii, it tends to naturalize in high elevation pastures, disturbed forests, and native māmane-naio forests. On the Big Island, large parts of the Humu'ula area on the slopes of Mauna Kea have become infested.

DISPERSAL MECHANISM: Gorse seeds are spread via expulsion from bursting seed pods, water, birds, sheep, cattle, and infested vehicles, equipment, and soil. Plants and seeds respond vigorously after a fire.

CULTIVATION: Gorse has been introduced throughout the world as an ornamental plant and living fence. It is a Hawaii state noxious weed and is illegal to plant or transport across the state.

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DAVID BENITEZ David_Benitez@nps.gov
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February 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2 *Groundhog Day*
3	4	5	6	7	8	9
10	11	12	13 *Ash Wednesday*	14 *Valentine's Day*	15	16
17	18 *President's Day*	19	20	21	22	23
24	25	26	27	28		

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ironwood

Casuarina equisetifolia

Be on the lookout for this INVASIVE SPECIES

IRONWOOD (AUSTRALIAN PINE) is an evergreen tree that looks like a pine (conifer) tree. Plants grow up to 60' and have long drooping branches and wispy slender pine needle-like "leaves" that give it a distinctive appearance. The grey-green jointed "leaves" are actually stems. Small woody fruits resemble tiny pine cones (.5-.8" diameter), form in clusters, and contain winged seeds.

PHOTO: B. Navez

PHOTO: Dan Clark | USDI National Park Service | Bugwood.org

◀ Slender pine-needle-like "leaves" with noticeable joints and grooves that have a distinctive pine tree appearance.

PHOTO: Arthur Chapman

▲ Small woody fruits resemble tiny pine cones.

ironwood

Casuarina equisetifolia

SPECIES TYPE & ORIGIN: Ironwood is a tree native to Malaysia, Southern Asia, and parts of Oceania.

IMPACTS: Ironwood grows very fast, up to 5-10′ per year, and can form single species stands that crowd out all other vegetation. Dropped "leaves" create a thick bed that can prevent the growth of other plants. A shallow root system makes this tree susceptible to falling over in high winds. As a nitrogen-fixing species, ironwood can alter the structure and composition of native ecosystems, potentially facilitating further invasion by other invasive species. Dense growth along coastal strands can interfere with the nesting habits of endangered sea turtles and seabirds.

LOCAL DISTRIBUTION & HABITAT: Ironwood has been introduced to tropical and subtropical beach areas around the world. It also thrives in disturbed areas, such as roadsides.

DISPERSAL MECHANISM: The small, winged seeds of ironwood are spread by the wind.

CULTIVATION: Ironwood was intentionally planted throughout Hawaii as a coastal windbreak. The Hawaii Department of Land and Natural Resources considers ironwood one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

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DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

March 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2 *Groundhog Day*
3	4	5	6	7	8	9
10 *Daylight Savings Time Begins*	11	12	13	14 *Valentine's Day*	15	16
17 *St. Patrick's Day*	18	19	20 *Spring Begins*	21	22	23
24 *Palm Sunday*	25	26	27	28	29 *Good Friday*	30
31 *Easter*						

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Australian tree fern

Sphaeropteris cooperi

Be on the lookout for this
INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

► Trunk does not have the thick soft fiber wrapping like the native hapu'u. Branches fall off leaving an oval ring scar pattern.

PHOTO: Forest & Kim Starr (UH)

▲ Triangular leaves with lacy blades and sori in the middle of the leaflet divisions.

AUSTRALIAN TREE FERN grows up to 40' tall or more and has stems covered by a clean cut, oval scar pattern. It has long white and short red-brown scales found at the base of the fronds. Leaves of mature plants are grouped in a tight rosette at the top of the stem rather than spread out along the stem. Sori (clusters of spores) are found in the middle of the pinnae or fern leaflet divisions.

PHOTO: Forest & Kim Starr (UH)

Australian tree fern

Sphaeropteris cooperi

SPECIES TYPE & ORIGIN: Australian tree fern is native to Queensland in northern Australia.

IMPACTS: Australian tree fern is shade-tolerant and has wind-dispersed spores that can travel over 7 miles from the parent plant, allowing it to easily be transported from the garden directly into the rain forest. Once established, it can displace other understory vegetation and outcompete native Hawaiian tree ferns (hāpu'u), which are an important component of Hawaiian rain forest ecosystems. It is found in residential areas and readily escapes cultivation into wild areas.

LOCAL DISTRIBUTION & HABITAT: Australian tree fern has been planted throughout the tropics. It has spread from residential plantings to intact rain forest in East Maui and on Kaua'i. On the Big Island, it is spreading from landscaped areas in Volcano, Laupāhoehoe, Kona, and other areas.

DISPERSAL MECHANISM: Australian tree fern spreads via wind-dispersed spores that can travel long distances.

CULTIVATION: Australian tree fern is a common home and resort landscaping plant in Hawaii. The Hawaii Department of Land and Natural Resources considers Australian tree fern one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

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DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

April 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22 *Earth Day*	23	24	25	26 *Arbor Day*	27
28	29	30				

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kāhili flower

Grevillea banksii

Be on the lookout for this INVASIVE SPECIES

PHOTO: Mauricio Mercadante

▶ Red bottle-brush-like flowers.

PHOTO: Moorea Biocode

▲ Deeply lobed wispy leaves.

KĀHILI FLOWER, sometimes known as bottlebrush, is a small showy ornamental tree (up to 25') with deeply lobed wispy leaves (5-12" long) that are smooth on top and fuzzy white underneath. Leaves end in a pointy tip and are arranged alternately along branches. Plants have red or yellow-white bottle-brush-like flower clusters (2-4" long) with a yellow calyx (outermost part of the flower, forms a cup-like whorl at base).

PHOTO: Tony Rodd

kāhili flower

Grevillea banksii

SPECIES TYPE & ORIGIN: Kāhili flower is a tree native to Australia.

IMPACTS: Kāhili flower can invade pastures, potentially reducing foraging area for grazing animals, and natural areas, potentially out competing native plants. This tree has become naturalized in similar climates in Madagascar, where it now dominates large tracts of forest. Flowers and seeds contain hydrogen cyanide. The sap and other parts of the tree can cause allergic contact dermatitis, much like poison ivy or oak.

LOCAL DISTRIBUTION & HABITAT: Kāhili flower was introduced to Hawaii in 1909. It is naturalized on all main Hawaiian Islands, except Lāna'i. There are significant infestations on the Big Island, where the red flower variety is prolific in the Ka'ū district and the yellow flower variety is invading Hawaiian Paradise Park subdivision. It thrives in areas with moderate amounts of moisture.

DISPERSAL MECHANISM: Kāhili flower seeds are wind dispersed.

CULTIVATION: Kāhili flower is a popular ornamental that readily escapes cultivation. It is a Hawaii state noxious weed and is illegal to plant or transport across the state.

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DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

May 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 *May Day*	2	3	4
5	6	7	8	9	10	11
12 *Mother's Day*	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27 *Memorial Day*	28	29	30	31	

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miconia

Miconia calvescens

Be on the lookout for this INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

◄ Large leaf with a "leaf within a leaf" vein pattern.

PHOTO: Forest & Kim Starr (UH)

▲ Leaf and fruit.

MICONIA is a fast-growing weedy tree that reaches 13-50'. Its large leaves average 3' long by 1' wide and have a distinctive "leaf within a leaf" vein pattern. The leaves are dark green and felt-like above and purple underneath. Plants produce dark purple fruits that are .3" in diameter and contain hundreds of seeds.

PHOTO: Forest & Kim Starr (UH)

miconia

Miconia calvescens

SPECIES TYPE & ORIGIN: Miconia is a tree native to South and Central America.

IMPACTS: Miconia trees can grow quickly and close together, shading out nearly all other forest plants with their large dark leaves. Miconia has a shallow root system and can cause increased erosion and landslides. It quickly matures, producing fruit after three to four years and flowers and fruits several times a year. Plants produce ten to twenty million seeds a year, which can remain viable for twelve years and possibly longer.

LOCAL DISTRIBUTION & HABITAT: Miconia was introduced to Hawaii as a garden plant in 1961. It has become widespread throughout much of windward Big Island.

DISPERSAL MECHANISM: Birds and animals (such as rats) spread miconia seeds long distances. Seeds, about the size of a sand grain, are unintentionally spread by humans and hitchhike on clothes, boots, gear, pets, and contaminated vehicles, equipment, and soil. Hitchhiking seeds have been moved on hāpu'u fern (*Cibotium* spp.) harvested from infested areas.

CULTIVATION: Miconia was primarily grown as an ornamental plant for arboreta. It is a Hawaii state noxious weed and is illegal to plant or transport across the state.

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DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

June 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14 *Flag Day*	15
16 *Father's Day*	17	18	19	20	21 *Summer Begins*	22
23	24	25	26	27	28	29
30						

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albizia

Falcataria moluccana

Be on the lookout for this INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

◀ Flowers are creamy white or light yellow to greenish-yellow, silky, and feather-like.

PHOTO: Forest & Kim Starr (UH)

▲ Seed pods can often be found beneath the trees.

ALBIZIA is a large tree, often 80-100' tall or more. Its trunk is smooth to slightly warty, very light in color, and usually straight and branchless up to 30'. It forms an umbrella-shaped canopy when growing in open conditions. The leaves are bipinnately compound and have a nectar-producing organ at the base. It has white silky feather-like flowers.

PHOTO: Forest & Kim Starr (UH)

albizia

Falcataria moluccana

SPECIES TYPE & ORIGIN: Alibizia is a tree native to Indonesia and Papua New Guinea.

IMPACTS: Albizia is one of the fastest growing trees in the world (up to 21' a year). It can form single species stands that shade out all competition. As a nitrogen-fixing species, it can alter the structure and composition of native ecosystems, potentially facilitating further invasion by other invasive species. Albizia is the preferred habitat for certain types of nonnative ants, including little fire ant (*Wasmannia auropunctata*). It can establish on new lava flows, replacing native species such as ʻōhiʻa lehua (*Metrosideros polymorpha*) and can also drop large limbs that can damage property.

LOCAL DISTRIBUTION & HABITAT: Hundreds of thousands of albizia trees have been planted throughout Hawaii. It rapidly spreads in moist to wet forests up to 2,000' in elevation.

DISPERSAL MECHANISM: Albizia seed pods are light and can be carried in the wind, but generally fall close to the tree. It is moved long distances for intentional planting. Seeds are moved in contaminated gear, vehicles and soil.

CULTIVATION: Albizia is grown as an ornamental and plantation/reforestation tree. Its wood is used for furniture and canoe-making and it is sometimes grown as a shade tree for coffee. The Hawaii Chapter of the American Society of Landscape Architects categorizes albizia as a "do not plant" species. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

HOW TO HELP: Report potential sightings within Hawai'i Volcanoes National Park:

DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085.

July 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4 *Independence Day*	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

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English ivy

Hedera helix

Be on the lookout for this INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

◄ Woody stem with aerial roots that help the plant climb over other plants and structures. Variably shaped leaves grow in an alternate arrangement.

PHOTO: Dauvit Alexander

▲ Tiny yellow-green flowers form in clusters.

ENGLISH IVY is a woody evergreen vine that can climb over almost anything using adventitious sticky roots. Its stems are covered in stout hairs. The variably shaped leaves (2-4") are waxy, dark green with white veins, and grow in an alternate arrangement along the stem. Under the right conditions it can produce clusters of greenish-white flowers that turn into black fleshy fruits.

PHOTO: Forest & Kim Starr (UH)

English ivy

Hedera helix

SPECIES TYPE & ORIGIN: English ivy is a woody vine native to Europe, western Asia, and northern Africa.

IMPACTS: English ivy can smother other plants from ground level to canopy, preventing sunlight from reaching the vegetation it covers. Its root system effectively outcompetes its "host" for nutrients. Suffocated trees and plants can die, and with the added weight of the vines, are likely to be blown down, potentially causing damage to property and disturbance in forest ecosystems. The seeds and fruit contain glycoside hederin, a toxic chemical that can cause acute illness in people and animals.

LOCAL DISTRIBUTION & HABITAT: In Hawaii, English ivy has escaped cultivation and naturalized in moderately wet forest, including the Puna and Volcano areas of the Big Island.

DISPERSAL MECHANISM: English ivy spreads vegetatively or longer distances via bird or animal disseminated seeds. Small pieces of stem can resprout, making dispersal through the dumping of garden waste and infested wood materials, flooding, and soil movement possible.

CULTIVATION: English ivy is a popular, low maintenance, fast-growing ground cover that is popular in Hawaii. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

HOW TO HELP: Report potential sightings within Hawai'i Volcanoes National Park:

DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

August 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

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formosa koa

Acacia confusa

Be on the lookout for this INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

◄ Flowers are bright yellow puff-balls.

PHOTO: Forest & Kim Starr (UH)

▲ Crescent moon-shaped "leaves" and seed pods.

FORMOSA KOA is a tall evergreen tree (up to 50') with a compact rounded crown. Mature "leaves" have a crescent moon or sickle shape (3-4"), while young leaf growth consists of small bipinnately compound leaflets. Plants have small bright yellow puff-ball flowers (.5" diameter). Seed pods are dark brown and flattened (4" long). This tree looks similar to the native Hawaiian koa and koaia trees.

PHOTO: Harvey Barrison

formosa koa

Acacia confusa

SPECIES TYPE & ORIGIN: Formosa koa is a tree native from Taiwan to the northern Philippines.

IMPACTS: Formosa koa is a prolific producer of seeds that can remain dormant for long periods of time. Mature trees shade out other plants and can form single species forest stands. All parts of this tree are considered toxic.

LOCAL DISTRIBUTION & HABITAT: Formosa koa has been introduced throughout the Pacific and has naturalized on all of the main Hawaiian Islands except for Ni'ihau. It thrives in wet and dry conditions up to 2,000'.

DISPERSAL MECHANISM: Formosa koa produce abundant seeds and can also reproduce vegetatively via cuttings. Seeds are moved long distances as ornamental and forestry plantings.

CULTIVATION: More than 295,000 Formosa koa trees were planted in Hawaii by the Division of Forestry in forest reserves. It has been planted for forestry and ornamental purposes throughout the Pacific. The Hawaii Department of Land and Natural Resources considers formosa koa one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

HOW TO HELP: Report potential sightings within Hawai'i Volcanoes National Park:

DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

September 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 *Labor Day*	3	4	5	6	7
8 *Grandparent's Day*	9	10	11	12	13	14
15	16	17	18	19	20	21
22 *Fall Begins*	23	24	25	26	27	28
29	30					

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coast banksia

Banksia integrifolia

Be on the lookout for this INVASIVE SPECIES

PHOTO: David Midgley

◄ Leaves are dark green above and white and woolly below.

PHOTO: Forest & Kim Starr (UH)

▲ Infructescence and seed pod.

COAST BANKSIA is an evergreen tall shrub/short tree in the Protea family that can grow 20-52' tall. Plants have rough grey bark and dark green leaves that are white and woolly underneath and grow in a whorled arrangement. Its leaves are long and narrow (2-8" long by .4-1" wide). Its flowers are pale yellow and grow in a dense spike (4-5" long) nested within the leaves. Older flowers fall away to reveal a "cone" that starts green and fuzzy and fades into grey with age. Each cavity in the cone contains 1 or 2 winged seeds.

PHOTO: Nick Turland

coast banksia

Banksia integrifolia

SPECIES TYPE & ORIGIN: Coast banksia is a tree native to eastern Australia.

IMPACTS: Coast banksia does well in coastal areas and in poor soil environments, making it a potential invader in coastal strand communities and lava fields.

LOCAL DISTRIBUTION & HABITAT: Coast banksia has started to naturalize and become weedy in western Australia and New Zealand. In Hawaii, it can be found on Kaua'i, Maui, and the Big Island, where it is found from sea level to 2400' elevation in Waimea. As the common name implies, this tree can live in coastal areas, where it is resistant to salt and wind exposure.

DISPERSAL MECHANISM: Coast banksia reproduces via winged seeds that are carried by the wind and can travel well beyond the parent plant.

CULTIVATION: Coast banksia has been planted in botanical gardens in Hawaii. It is cultivated as a specimen tree in Waimea and Honomalino on the Big Island. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

HOW TO HELP: Report potential sightings within Hawai'i Volcanoes National Park:

DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

October 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2	3	4	5
6	7	8	9	10	11	12
13	14 *Columbus Day*	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31 *Halloween*		

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night cestrum

Cestrum nocturnum

Be on the lookout for this INVASIVE SPECIES

► Flowers are not showy, but powerfully fragrant at night when in bloom.

PHOTO: Kai Yan, Joseph Wong

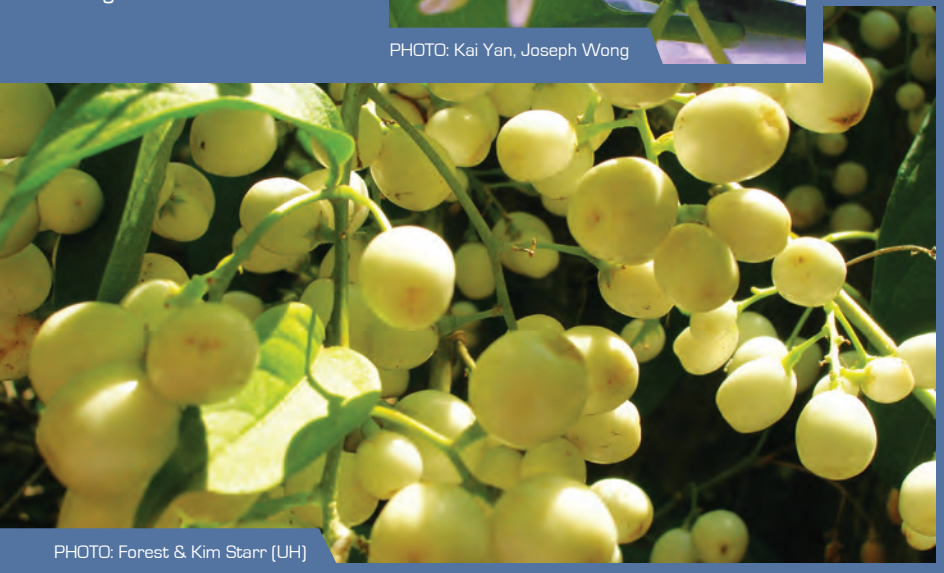

PHOTO: Forest & Kim Starr (UH)

▲ White berry.

NIGHT CESTRUM (NIGHT BLOOMING JASMINE) is a sprawling evergreen shrub with pale white bark that turns green with age. It grows to 20' tall and has smooth hairless leaves that grow in an alternate arrangement (3-6" long) and are foul smelling when crushed. The predominantly white tubular flowers (1" long), which open at night, are strongly fragrant and form in clusters. Glossy berries start green and mature white (.2-.5" diameter).

PHOTO: Cary Bass

night cestrum

Cestrum nocturnum

SPECIES TYPE & ORIGIN: Night cestrum is a shrub native to tropical America and Cuba.

IMPACTS: Night cestrum can form dense impenetrable thickets that exclude all other plants. All parts of this plant are toxic to humans and animals, including livestock. Its strong scent can cause hay fever-like respiratory symptoms in sensitive and asthmatic people. Once naturalized, night cestrum can be hard to control.

LOCAL DISTRIBUTION & HABITAT: Night cestrum has been introduced to the southern United States, China, India, Australia, New Zealand, and much of Oceania. In Hawaii, night cestrum has escaped cultivation on all of the main islands except Moloka'i, Ni'ihau, and Kaho'olawe. On the Big Island, this plant is widely cultivated and common in communities surrounding Hawai'i Volcanoes National Park. It naturalizes in moist to wet forests, and along roads, trails, and streams.

DISPERSAL MECHANISM: Night cestrum seeds are moved by birds, flooding, soil movement, and garden waste dumping. Its seeds persist for long periods of time and it can reproduce vegetatively from stem or root fragments.

CULTIVATION: Night cestrum is a popular ornamental plant due to its strong-smelling flowers. The Hawaii Department of Land and Natural Resources considers night cestrum one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

HOW TO HELP: Report potential sightings within Hawai'i Volcanoes National Park:

DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

November 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3 *Daylight Saving Time Ends*	4	5	6	7	8	9
10	11 *Veteran's Day*	12	13	14	15	16
17	18	19	20	21 *Thanksgiving*	22	23
24	25	26	27	28 *Hanukkah Begins*	29	30

U.S. Department of Interior - National Park Service
Pacific Island Network — Inventory & Monitoring Program
http://science.nature.nps.gov/im/units/pacn/

African tulip tree

Spathodea campanulata

Be on the lookout for this INVASIVE SPECIES

PHOTO: Forest & Kim Starr (UH)

◄ Showy tulip-like red-orange flowers.

PHOTO: Manuel Anastácio

▲ Very small seeds can be carried long distances in the wind.

AFRICAN TULIP TREE is a large (80'+) tree with glossy leaves and big showy tulip-like red-orange flowers (up to 8" long) that appear at the ends of branches. Leaves have prominent veins and are bronze when young. The branches are covered with small white lenticel (pore) spots. Its fruits are upright canoe-shaped pods (10" long). Each pod contains 500+ heart-shaped, tissue-papery, flat seeds that are dispersed in the wind when the pod bursts. Spent empty pods are sometimes used as toy boats by children.

PHOTO: Forest & Kim Starr (UH)

African tulip tree

Spathodea campanulata

SPECIES TYPE & ORIGIN: African tulip tree is a tree native to tropical Africa.

IMPACTS: African tulip tree readily escapes intentional plantings. It can form dense stands that crowd and shade out other vegetation. Plants can grow 2″ in diameter per year and are tolerant of shade. Its dropped flowers can create a slipping hazard for people and cars. The branches are easily broken in the wind, potentially creating road and structure hazards.

LOCAL DISTRIBUTION & HABITAT: African tulip tree has been introduced and become invasive throughout the Pacific. It is commonly found in low to mid-elevation rain forests on Kaua'i, O'ahu, and East Maui. It can spread in open agricultural land, waste areas, and closed forest.

DISPERSAL MECHANISM: African tulip tree produces large numbers of wind-dispersed seeds that establish quickly and grow rapidly. It can reproduce from stump suckers.

CULTIVATION: African tulip tree is a popular ornamental and street tree. Over 30,000 were planted on Maui and the Big Island by the state of Hawaii, including aerial seeding in Pana'ewa and Waiākea near Hilo in 1928. The Hawaii Department of Land and Natural Resources considers African tulip tree one of Hawaii's most invasive horticultural plants. It has been classified as "High Risk" by the Hawaii-Pacific Weed Risk Assessment and should not be cultivated.

HOW TO HELP: Report potential sightings within Hawai'i Volcanoes National Park:

DAVID BENITEZ David_Benitez@nps.gov
tel. 808-985-6085

December 2013

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5 *Hanukkah*	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21 *Winter Begins*
22	23	24	25 *Christmas*	26	27	28
29	30	31				

U.S. Department of Interior - National Park Service
Pacific Island Network — Inventory & Monitoring Program
http://science.nature.nps.gov/im/units/pacn/

TO REPORT AN INVASIVE SPECIES:

Within Hawai'i Volcanoes National Park:

David Benitez, Ecologist
David_Benitez@nps.gov
tel. 808-985-6085

Outside of the park on the Big Island:

Big Island Invasive Species Committee
tel. 808-961-3299
Online Pest Reporting:
www.reportapest.org

FOR MORE INFORMATION ON INVASIVE SPECIES:

Hawaii Ecosystems at Risk Project
www.hear.org

Hawaii-Pacific Weed Risk Assessment
www.hpwra.org

Hawaii Invasive Species Council
www.hawaiiinvasivespecies.org

Hawaii Early Detection Network
www.reportapest.org

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Calendar Design: Hagadone Printing

▸ KOSTER'S CURSE

▸ GORSE

▸ IRONWOOD

▸ AUSTRALIAN TREE FERN

▸ KĀHILI FLOWER

▸ MICONIA

▸ ALBIZIA

▸ ENGLISH IVY

▸ FORMOSA KOA

▸ COAST BANKSIA

▸ NIGHT CESTRUM

▸ AFRICAN TULIP TREE